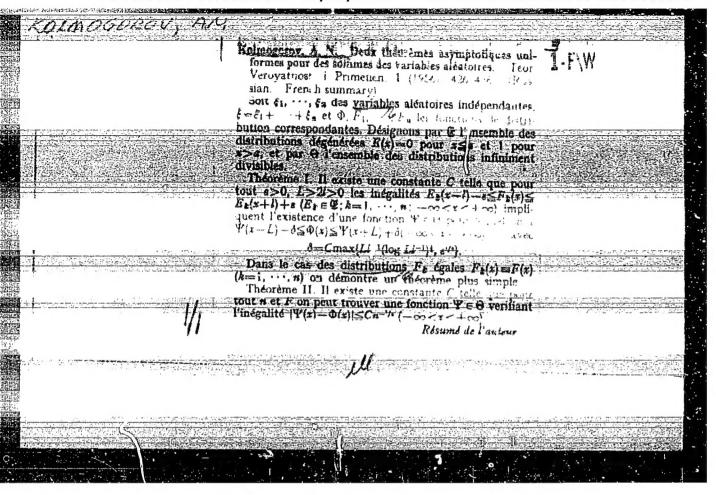
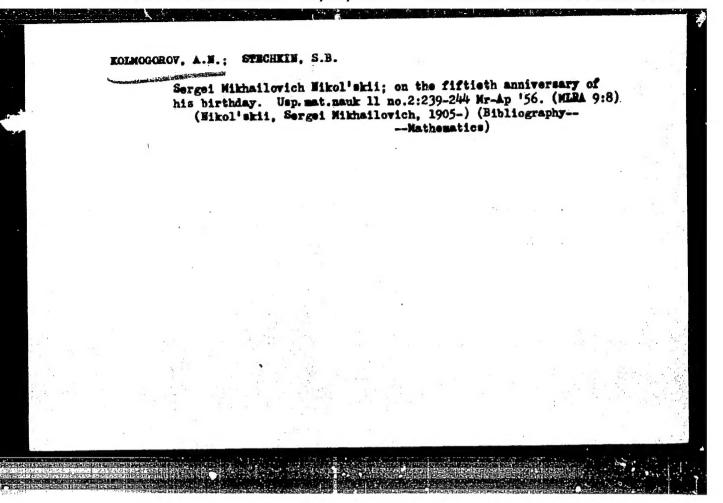
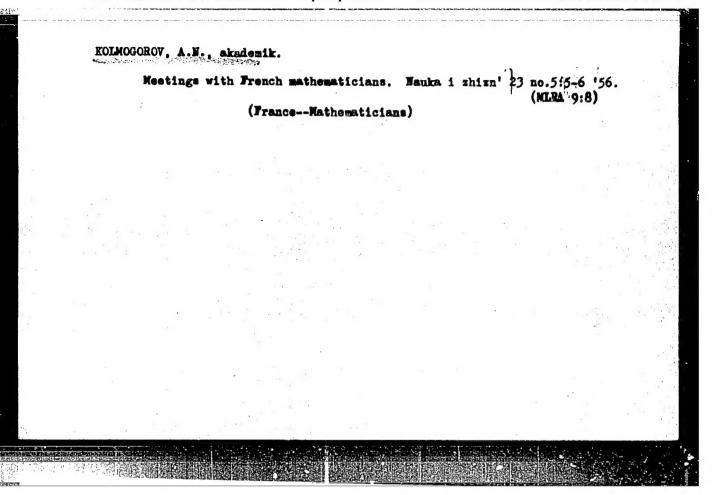
KOLMOGOROV, A.N.	
Kolmogorov, A. N. On the Skorohod convergence, J. F. W.	
By intervention of the graph space $T \times X$ it is possible	. 6 < 3
to convert D into a complete metric space Not all details we six a nel there	
βalong the definition of ω*. Λ. L. (4.03)	
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SUBJECT AUTHOR

地区位置

USSR/MATHEMATICS/Theory of functions CARD 1/1 PG - 377 KOLMOGOROV A.N.

TITLE

On the representation of continuous functions of several variables

by superposition of continuous functions of a smaller number of

variables.

PERIODICAL

Doklady Akad. Nauk 108, 179-182 (1956)

reviewed 11/1956

The author gives an interesting contribution to the solution of Hilbert's thirteenth problem and obtains some surprising results. It is established that every continuous function of an arbitrarily large number of variables can be represented as a finite superposition of continuous functions of not more than three variables. For n = 4 e.g. there holds a representation of the form

$$f(x_1, x_2, x_3, x_4) = \sum_{r=1}^{4} h^r \left[ x_4, g_1^r (x_1, x_2, x_3), g_2^r (x_1, x_2, x_3) \right].$$

The question of the representability of a function of three variables by superposition of continuous functions of two variables is not answered. But it is shown that this representation becomes possible if auxiliary variables are admitted which run through a universal tree instead of the number line.

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5"

WOLMOGOROV, A. N. (Acad.)

"Theory of Transmission of Information and Limits of Its Applicability,"

paper read at the Session of the Acad. Sci. USSR, on Scientific Problems of Automatic Production, 15-20 October 1956.

Avtomatika i telemekhanika, No. 2, p. 182-192, 1957.

9015229

SUBJECT

USSR/MATHEMATICS/Topology

CARD 1/3

PG - 558

LUTHOR TITLE

KOLHOGOROV A.N.

On certain asymptotic characteristics of completely bounded

metric spaces.

PERIODICAL

Doklady Akad. Nauk 108, 385-388 (1956)

reviewed 1/1957

For a finite set X the number  $I_{x} = [\log_{2} |X|] + 1$  is considered as a measure of the the quantity of information concerning the determination of a given element of X. If X is an infinite metric (and totally bounded) space and &> 0 lets a)  $N_{\#}^{a}(\mathcal{E}) = \inf |\widetilde{X}|$ ,  $\widetilde{X} \leq X$ , each point of X being in a distance  $\leq \mathcal{E}$  of some  $\widetilde{x} \in \widetilde{X}$ ; b)  $H_{x}^{b}(\mathcal{E}) = \inf |F|$ , F being covering of X by sets of dyameter  $\in \mathcal{E}$ each; c) F(E) - sup |S|, S cons. sving of points pairwise distant > E. These functions are used for approximative & -informations; they

 $\xi \to 0$ .  $\pi_{\underline{x}}^{\underline{a}}(\xi) \le \pi_{\underline{x}}^{\underline{b}}(\xi) \le \pi_{\underline{x}}^{\underline{c}}(\xi) \le \pi_{\underline{x}}^{\underline{a}}(\frac{\underline{\xi}}{2})$  (Theorem 1).

Let  $f \sim g$ ,  $f \simeq g$  respectively mean  $\lim_{x \to g} (f : g) = 1$ , and  $\lim_{x \to g} (f : g) > 0$ ,  $\lim_{x \to g} (f : g) < \infty$ , for  $\varepsilon > 0$ . In the theory of informations, the strong

III IV

Doklady Akad. Nauk 108, 385-388 (1956)

CARD 3/3

PG - 558

M<sup>S</sup> is any bounded part of R<sup>S</sup> with non void interior; A<sup>S</sup> is the set of all uniform analytic functions of s variables defined in a bounded open region G of the s-dimensional complex space.

H<sup>S</sup><sub>pQ</sub> is the set of all real-valued functions in I<sup>S</sup> having the derivatives of order p>0 satisfying the Hölder condition with a common constant.  $\mathbf{Q}_{\mathbf{p}}^{\mathbf{S}}$  is the set of functionals  $\varphi$  in A<sup>S</sup> such that  $|\psi| \leq C_4$ ,  $|\varphi(t) - \psi(g)| \leq C_5 \left[ g(p,g) \right]^{\mathbf{p}}$ ,  $0 < \beta \leq 1$ ;  $\bigvee_{p \in S} \mathbf{Q}_{\mathbf{p}}^{\mathbf{S}}$  is the analogous set of all the real-valued functionals defined in  $\mathbf{H}_{\mathbf{p}; \mathbf{K}}^{\mathbf{S}}$ . The metric in each of the spaces considered is properly defined.

If  $\mathbf{H} \subseteq \bigcup_{\mathbf{p} \in S} \mathbf{H}_{\mathbf{p}}$ , then  $\mathbf{H}_{\mathbf{p}}^{\mathbf{Z}}(\xi) \leq \sum_{\mathbf{p} \in S} \mathbf{H}_{\mathbf{p}}^{\mathbf{Z}}(\xi)$ ,  $\mathbf{x} \in \{a,b,c\}$  (Theorem 2), and  $\mathbf{H}_{\mathbf{p}}^{\mathbf{C}}(\xi) \leq \prod_{\mathbf{p} \in S} \mathbf{H}_{\mathbf{p}}^{\mathbf{Z}}(\xi)$  (Theorem 3); here for a given  $\mathbf{X}^{\mathbf{C}} \subseteq \mathbf{X}$  and  $\mathbf{F} \subseteq \mathbf{Y}^{\mathbf{C}}$  (seet of all mappings of X into Y)  $\mathbf{F}_{\mathbf{x}}$ , denotes all the mappings of X' into Y each of which is prolongable to be a mapping of X into Y that belongs to F.

KOlMOGOROV, A.M.

SUBJECT USSR/MATHEMATICS/Theory of probability CARD 1/2 PG - 995

AUTHOR GELFAND I.M., KOLMOGOROV A.M., YAGLOM A.M.

TITLE On a general definition of an amount of information.

PERIODICAL Doklady Akad. Nauk 111, 745-748 (1956)

reviewed 7/1957

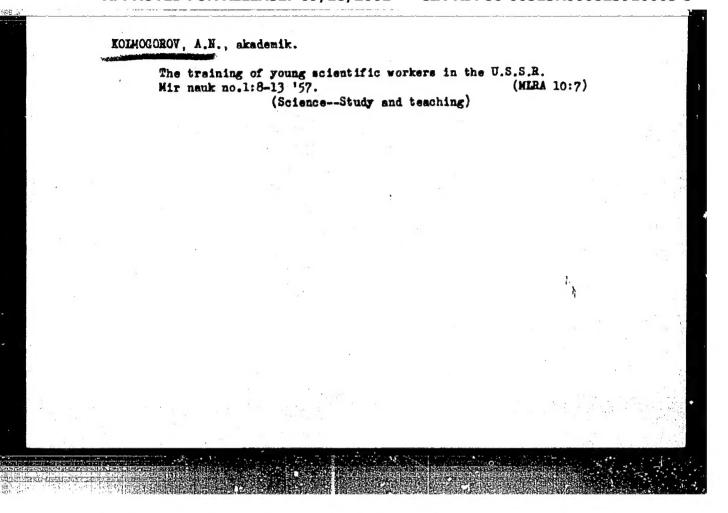
Let  $\mathcal T$  be a Boolean algebra and let P denote a probability on  $\mathcal T$ . If  $\Omega$  and  $\mathcal L$  are two finite subalgebras of  $\mathcal T$ , then the expression

$$I(A, \mathcal{L}) = \sum_{i,j} P(A_i B_j) \log \frac{P(A_i B_j)}{P(A_i)P(B_j)}$$

is by definition "the amount of information contained in the results of the experiment  $\Omega$  relative to the results of the experiment  $\mathcal{L}$  "  $(I(\Omega,\mathcal{L}) = I(\mathcal{L},\Omega))$ . Giverally,

(1) 
$$I(\mathcal{O}_1, \mathcal{L}) = \sup_{\mathbf{Q}_1 \in \mathbf{Q}_1, \mathcal{L}_1 \leq \mathcal{L}} I(\mathbf{Q}_1, \mathcal{L}_1),$$

where  $m_1$  and  $\mathcal{L}_1$  are finite subalgebras; symbolically (1) can be written



KOLMOGOROV, A.H. (Moscow)

Beals of the theory of real numbers. Met. pros.no.2:169-171 '57.

(Mira 11:7)

(Mira 11:7)

KOLMOGOROV, A.N

SOV/52-2-4-7/7

AUTHOR:

None Given.

TITLE:

A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probabilities. (Moscow, February - May, 1957). (Rezyume dokladov, sdelannykh na zasedaniyakh nauchno-issledovateliskogo seminara po teorii veroyatnostey. (Moskva, Fevrali -

May 1957 g.)

PERIODICAL: Teoriya Veroyatnostey i yeye Primeneniya, 1957, Vol.II, Nr.4, pp.478-488. (USSR)

ABSTRACT: Kolmogorov, A.N., On stochastic processes (General definitions of regularity and singularity. The amount of information per unit of time). Freyman, G.A. (Yelabuga), Local limit theorems for large deviations from the mean and their application to number theory. An expression is given for the number of solutions of the

equation  $x_1^n + x_2^n + \dots + x_k^n = N$  as  $k \to \infty$  and  $k < \gamma N$ , where

Card 1/2 0 <  $\sqrt{<1}$ , and N is a positive integer.

AUTHOR TITLE KOLMOGOROV, A.N. 20-5-10/60

On the Representation of Continuous Functions of many Variables by Superposition of Continuous Functions of one

Variable and Addition .-

(O predstavlenii nepreryenykh funkttaty neskol\*kikh peremennykh v vide superpositsiy nepreryenykh funktsiy odnogo

peremennogo i slozhedya. - Russian)

PERIODICAL

Doklady Akademii Nauk SSSR. 1957, Vol 114, Nr 5,

pp 953-956 (USSR)

ABSTRACT

The present paper discussed in short the proof of the following theorem: In the case of any whole  $n \ge 2$  such steady real functions  $T^{pq}(x)$  defined on the unit stretch  $E^1 = [0;1]$  exist that each steady real function  $f(x_1, \dots x_n)$  defined on an n-dimensional unit cube  $E^n$  can be represented in the form

 $z(x_1, ..., x_n) = \sum_{q=1}^{q=2} \frac{1}{n+1} \chi_q \left[ \sum_{p=1}^{n} z^{pq}(x_p) \right]$ 

Here the functions  $\chi_q(y)$  are real and steady.

CARD 1/2

SUBMITTED:

20.6.1957

AVAILABLE:

Library of Congress.

CARD 2/2

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# KOLMO E ORCV, A.N.

NEMCHENKO, V.S.; BOCHAROV, M.D.; KRISTOSTUR'YAN, N.G.; CHERKASOV, V.I.;

ANDREYANOV, V.V.; KAUFMAN, V.M.; PAKHMANOV, V.F.; ZVORYKIN, A.A.,
otv.red.; ANICHKOV, N.M., red.; BARDIN, I.P., red.; BLAGARRAVOV,
A.A., red.; VVEDENSKIY, B.A., red.; GRIGOR'YEV, A.A., red.;
KAPUSTINSKIY, A.F., red.; KOLMOGOROV, A.N., red.; MIKHAYLOV, A.A.,
red.; OPARIN, A.I., red.; PETROV, F.M.; red.; STOLETOV, V.M., red.;
STRAKHOV, M.M., red.; FIGUROVSKIY, M.A., red.; KOSTI, S.D., tekhn.red.

[Biographical dictionary of leaders in the natural sciences and technology] Biograficheskii slovar' deiatelei estestvosnaniia i tekhniki. Vol.1. A. L. Otvetstvennyi red. A.A.Zvorykin: Red. kollegiia: E.N.Anichkov i.dr. Moskva. Gos. nauchn. izd-vo "Bol'shais Sovetskaia Entsiklopediia." 1958. 548 p. (MIRA 12:4)

1. Redaktsiya istorii estestvoznaniya i tekhniki Bol'shoy Sevetskoy Entsiklopedii (for Nemchenko, Bocharov, Kristostur'yan, Cherkasov; Andreyanov, Kaufman, Pakhmanov). (Scientists)

KOLMOGOROV, A. N.

"Some Questions of Approximation and Representation of Functions," with V. I. Arnold

"Linear Dimensionality of Linear Topological Spaces."

paper3 submitted at International Congress Mathematicians, Edinburgh, 14 - 21 Aug 58.

KOLMOGOROV, A.N

SOV/52-3-2-10/10

AUTHOR: None Given

TITIE: A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probability, Moscow, September-March 1957-1958 (Rezyume dokladov, sdelannykh na zasedaniyakh nauchno-issledovatel'skogo seminara po teorii veroyatnostey, Moskva, sentyabr' mart 1957-58 g.)

PERIODICAL: Teoriya veroyatnostey i yeye primeneniya, 1958, Vol III, Nr 2, pp 212-216 (USSR)

ABSTRACT: A. N. Kolmogorov - Ergodic stationary random processes with a discrete spectrum. If S is a set of numbers and  $\xi(t)$  is a stationary ergodic function defined for all random values of t as

 $\xi$  (t)  $=\sum_{\lambda \in S} \varphi(\lambda) e^{i\lambda t}$ 

then  $\rho(\lambda) = |\phi(\lambda)|$  is not random. Therefore, the unit probability can be expressed as  $\rho(\lambda) = +\sqrt{f(\lambda)} > 0$  and  $\phi(\lambda) = \rho(\lambda)e^{i\Theta(\lambda)}$  where  $\Theta(\lambda)$  is defined as mod  $2\pi$  and represents a random element of the space  $A_S$  of all the

SOV/52-3-2-10/10

A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probability, Moscow, September-March 1957-1958

functions  $\alpha(\lambda)$  . The space  $A_{\rm S}$  represents a compact group with a sub-group  $B_{\rm S}$  . The factorial group

 $\Gamma_S = A_S - B_S$  will determine the distribution of

the function  $\xi(t)$  becoming isomorphic of the other two. Ye. B. Dynkin - Infinitesimal operators of "jump" Markov processes. Published in Vol III, Nr 1 of this journal. V. A. Volkonskiy - A random change of time in strictly Markov processes. If  $x_t = x(t, \omega)$  is a homogeneous Markov process on the space  $\xi$  and  $\tau_t(\omega)$  is a function non-decreasing at all  $\omega$ , and that  $\tau_t(\omega)$  at all t is a random value not dependent on future, then the function  $y(t, \omega) = x(\tau_t(\omega), \omega)$  is a process obtained from  $x_t$  with random change of time  $\tau_t$ . At some conditions of  $\tau_t$  the

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SOV/52-3-2-10/10

A Summary of Papers Presented at the Sessions of the Scientific Research Seminar on the Theory of Probability, Moscow, September-March 1957-1958

the process yt becomes a homogeneous strictly Markov pro-In the case of a homogeneous process with a random change of time and a uniform deformation of space it is possible to obtain any continuous Markov process which will be regular in the interior and absorbed near the boundary. R. L. Dobrushin - A statistical problem of detecting a signal in the noise of a multi-charnel system reduced to stable distribution laws. Published in this issue. V. M. Zolotarev - Some new properties of stable distribution laws. Published in Vol II, Nr 4 of this journal.
R. A. Minlos - On the extension of the generalized random process to additive measure. Any exact process, such as Gelfand's, based on the cylindrical set of numbers on linear topologic space E' and extended into a space will retain its additive property defined as the set B the space E' . (There are 2 references, 1 Soviet and 1 French). D. M. Chibisov - Limit distribution for the number of runs in a Bernouilli Trials. If k represents a number of independent runs in two trials, the probability of a positive

Card 3/

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5"

AUTHOR: -Kolmogorov, A.H., Krasnosel'skiy, M.A. SOV/42-13-3-12/41

TITLE: Mark Grigor' sevich Kreyn (on the occasion of his 50th birthday)

(Mark Grigor yevich Kreyn (K pyatidesyatiletiyu so dnya

rozhdeniya))

**建筑建筑的设计的大学等等。**1996年,1986年,19

PERIODICAL: Uspekhi Matematicheskikh Mauk, 1958, Vol 13; Nr 3, pp 213-224 (USSR)

ABSTRACT: This is a short biography and very detailed appreciation of the mathematical merits of the versatile and extraordinary intensively

working mathematician Kreyn. It contains a photo of Kreyn and a chronological list of his scientific publications with 151

number: (from 1926 to 1958).

Card 1/1

SOV/42-13-4-1/11 Kolmogorov, A.M., and Uspenskiy, V.A. AUTHORS: On the Definition of the Algorithm (K opredeleniyu algoritma) TITLE: PERIODICAL: Uspekhi satematicheskikh nauk, 1956, Vol 13, Mr4, pp 3-26 (USSR) The authors remark that the present paper is the result of & ABSTRACT: . futile search for a generalization and extension of the usual definition of the notion Malgorithm". The authors aim is to show that in the momentary state of the science, the most general possible notion of the algorithm is combined quite naturally with the notion of a partially recursive function, § 1 given, the survey of existent definitions and investigates the degree of their logical completeness and their generality. § 2 proposes a new definition of the algorithm (see Kolmogorov Ref 3). . 3. shows that every algorithm which corresponds to this new definition, however, finally ends in the calculation of the .values of a partially recursive function. Two appendices give definitions and facts on recursive functions and an example for an algorithm. There are 22 references, 6 of which are Soviet, 13 American, 2 German, and 1 English.

Card 1/1

Kolmogorov, A.N. (Academician) 20-119-5-5/59 AUTHOR: APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5 Automorphisms of Lebesgue Spaces (Novyy metricheskiy invariant transitivnykh dinamicheskikh sistem i avtomorfizmov prostranstv Lebega)

PERIODICAL: Doklady Akademii Nauk, 1958, Vol 119, Nr 5, pp 861-864 (USSR)

1. Let be the Boolean algebra of the measurable sets considered ABSTRACT: mod 0 of the Lebesgue space M with the measure M, M(M) = 1. Let K be a subalgebra of F closed in the metric F (A-B) F (A-B) F (A-B) F (B-A)). It generates a decomposition F of M defined mod 0, where F Fthen and only then if A mod O can be established by complete elements of \$500 On the elements C of \$500 there is defined a canonic system of neasures  $\nearrow_{\mathbb{C}}$ . For every  $x \in \mathbb{C}$  let  $\bigwedge_{x}(A) \times - \bigwedge_{\mathbb{C}}(A \cap \mathbb{C})$ . For the subalgebras Ol, B, L of Y and C & & let

(1) 
$$I_{\mathbf{C}}(\mathcal{O}_{i}, Y_{i}|L) = \sup_{i,j} \sum_{\mathbf{i},j} \bigwedge_{\mathbf{x}} (A_{i} \cap B_{j}) \log \frac{\bigwedge_{\mathbf{x}} (A_{i} \cap B_{j})}{\bigwedge_{\mathbf{x}} (A_{i}) \bigwedge_{\mathbf{x}} (B_{j})}$$

where the supremum is taken over all finite decompositions H = =  $A_1 U A_2 U \cdots U A_n$ ,  $M = B_1 U B_2 \cdots U B_n$  for which  $A_1 \cap A_1 = M$ ,

Card 1/5  $B_1 \cap B_1 = N_2$  i  $\neq j_2 (N = \text{empty set})$ . (1) can be interpreted as the AUTHOR:

Kolmogorov, A.N., Academician

SOV/20-120-2-3/63

TITLE:

On Linear Dimension of Topological Vector Spaces (O lineynoy

razmernosti topologicheskikh vektornykh prostranstv)

ABSTRACT:

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 2, pp 239-241 (USSR) The author introduces the linear dimension  $\delta$  (E) of the topological vector space E so that the following properties hold: 1) If E is

isomorphic to a closed linear subspace of the topological vector space E', then  $\delta(E) \leq \delta(E')$  and 2) if E' can be mapped linearly and continuously onto E, then  $\delta(E) \leq \delta(E')$ . It is shown that every other function d(E) which satisfies 1) and 2), can be represented in the form  $d(E) = f[\delta(E)]$ , where from  $\delta(E) \leq \delta(E')$  there follows  $d(E) \leq d(E')$ . The most interesting assertion is that the inequations consisting between the linear discretization  $\delta(E)$ . the inequations consisting between the linear dimensions  $\delta(E)$ inthe case of analytic functions prove and confirm the intuitive idea of the classical analysis that the totality of functions of several variables has "more elements". But in the function spaces of finite smoothness this idea is not confirmed by the properties

of  $\delta(E)$ . Altogether the paper contains 10 theorems. There are 4 references, 2 of which are Soviet, 1 French and 1 American.

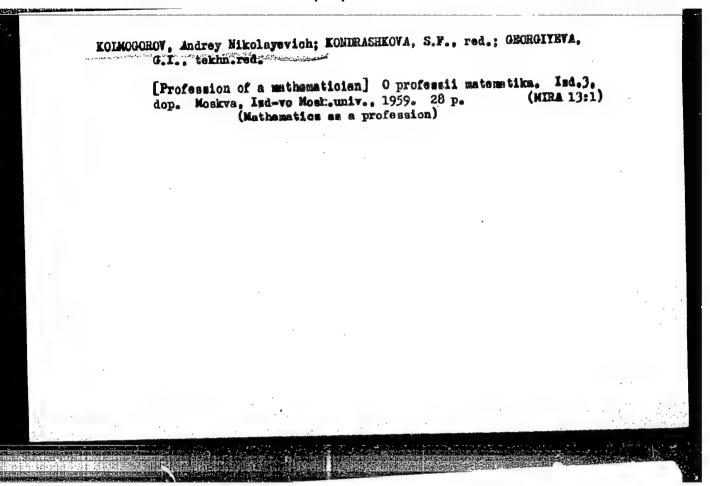
SUBMITTED:

February 18, 1958

2. Tensor analysis -1. Topology

Card 1/1

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003APPROVED FOR RELEGIANCE BY AND A STATE OF THE PROPERTY OF THE



16(1) AUTHORS:

SOV/42-14-2-1/19 Kolmogorov, A. H. and Tikhomirov, V. M.

The E-Entropy and E-Capacity of Sets in Functional Spaces

PERIODICAL: Uspekhi matematicheskikh nauk, 1959, Vol 14, Nr 2, pp 3-86 (USSR)

ABSTRACT:

The paper is a systematic representation of results obtained from 1954 to 1958 by K.I. Babenko, A.G. Vitushkin, V.D. Yerokhin, A.N. Kolmogorov, and V.M. Tikhomirov. After a short introduction there follows: §1. Definition and fundamental properties of the functions H<sub>E</sub>(A) and C<sub>E</sub>(A). §2. Examples of the rigorous

calculation and the estimation of these functions. §3. Typical orders of increase of these functions. §4. The E-entropy and E-capacity in finite-dimensional spaces. §5. E-entropy and E-capacity for functions of finite smoothness. §6. E-entropy of

the class of differentiable functions in the metric  $L^2$ . §7.  $\xi$ entropy of classes of analytic functions. §6. E-entropy of classes of analytic functions bounded on the real axis. §9. Eentropy of the spaces of real functionals. Addition : Theorem of A.G. Vitushkin on the impossibility to represent a function of several variables by superpositions of functions of a smaller number of variables. Addition 2: Connection with the probability.

Card 1/2

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sov/42-14-2-1/19

The E-Entropy and E-Capacity of Sets in

Functional Spaces

theoretical treatment of signal transmission. In the text the authors mention V.I.Arnolia, L.S.Pontryagin, L.G.Shnirl'man, N.S.Bakhvalov, I.M.Yaglom, and V.A.Kotel'nikov. The paper contains 31 theorems, among them some unpublished results of V.I.Arnol'd and V.M.Tikhomirov. There are 12 figures, and 29 references, 22 of which are Soviet, 1 German, 3 American, 1 Polish, and 2 Italian.

December 15, 1958 SUBMITTED:

Card 2/2

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5"

Ú sov/20-124-4-6/67 16(1) Kolmogorov, A.N. (Academician) Entropy per Time Unit as a Metric Invariant of Automorphisms (Ob entropii na yedinitsu vremeni kak metricheskom AUTHOR: TITLE: invariante avtomorfizmov) PERIODICAL: Doklady Akademii nauk SSSR, 1959, 701 124, Nr 4, pp 754-755 (USSR) 2,3, and 4 of his publication The author rejects theorems 2,3, and 4 of his publication Ref 1 . In / Ref 1 / the author proved theorem 2 under the ABSTRACT: use of an assumption which is not satisfied. Therewith also theorem 3 and 4 are senseless. V.A. Rokhlin called the author's attention to the error by a construction of a councerexample. The author gives improved theorems with a smaller domain of action. He mentions the dissertation of D.Z.Arov (Odessa, 1957) and a paper of Ya. Sinay Ref 27. There are 3 Soviet references. November 25, 1958 SUBMITTED: Card 1/1

KOLHOGOROV, Andrey Wikolayevich; FOMIN, Sergey Vasil'yevich; ZHELOBENKO, D.P., red.; YERMAKOV, M.S., tekhn.red.

[Elements of the theory of functions and of functional analysis]
Elementy teorii funktsii i funktsional'nogo analiza. Moskva,
Izd-vo Mosk.univ. Wo.2. [Measure, Lebesgus integral, Hilbert
space] Mera, integral Lebega, gil'bertovo prostranstvo. 1960.
118 p. (MIRA 13:7)
(Functions) (Functional analysis)

BERNSHTEIN, S.W.; AKHIYEZER, W.I., red.; KOLMOGOROV, A.W., red.;
PETROVSKIY, I.G., red.; RYVKIW, A.Z., red.izd-ve; VIDENSKIY,
V.S., red.izd-ve; MARKOVICH, S.G., tekhn.red.

[Collected works] Schranie sochinenii. Moskva, Izd-vo Akad.
nauk SSSR. Vol.3. [Differential equations, calculus of variations and geometry (1903-1947)] Differential nye uravneniia, variation-noe ischialenie i geometriia (1903-1947). 1960. 438 p.
(MIRA 13:8)

(Differential equations) (Calculus of variations)
(Geometry)

87984

s/052/60/005/002/001/003 0111/0222

16.6160

AUTHORS: Kolmogorov, A.R., and Rozanov, Yu.A.

TITLE: On a Strong Mixing Condition for Stationary Random Gaussian Processes

PERIODICAL: Teoriya veroyatnostey i yeye primeneniye, 1960, Vcl.5, No.2, pp.222-227

TEXT: Two 6-algebras of events M' and M'' are independent if for arbitrary  $A' \in \mathcal{M}$ ,  $A'' \in \mathcal{M}$  it holds: P(A',A'') = P(A')P(A''). As a measure of dependence of two 6-algebras M.Rosenblatt (Ref.1) proposed

For the stationary random process  $\xi(t)$ ,  $\alpha(m_{\infty}^t, m_{t+C}^{\infty})$ , (where  $m_{\epsilon}^t$  denotes the 6-algebras generated by  $\xi(u)$ ,  $s \in u \in t$ ) depends only on  $\epsilon$  and is denoted with  $\alpha(\epsilon)$ . If  $\alpha(\epsilon) \to 0$  for  $\epsilon \to \infty$  then  $\xi(t)$  has the property of a strong mixing. For arbitrary systems  $\{\xi\} = Q'$  and  $\{\eta\} = Q''$  with finite second moments the author introduces the magnitude

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87984

S/052/60/005/002/001/003 C111/C222

On a Strong Mixing Condition for Stationary Random Gaussian Processes

$$g(O(1,O(1)) = \sup_{\xi_1 \in \mathbb{T}} \frac{|M(\xi - M \xi)(\eta - M \eta)|}{[M(\xi - M \xi)^2 M(\eta - M \eta)^2]^{1/2}}$$

If Q! and Q!" are the sets of all magnitudes with finite second moments being measurable with respect to W!" and W!" then, according to the definition (Ref.2)

g(M', M') = g(Q', Q'')
is the maximal correlation coefficient between M' and M''.

It always holds
(1) of (Mt', Mt") ≤ g (Mt', Mt").

Card 2/5

Let  $\{\xi\}$  and  $\{\eta\}$  be two sets of random magnitudes having Gaussian distributions (for arbitrary finite  $\{\xi_1,\dots,\xi_m\}$  and  $\{\eta_1,\dots,\eta_n\}$ ). Let  $\{\eta_{\xi}\}$  and  $\{\eta_{\eta}\}$  be  $\{\xi_{\eta}\}$  and  $\{\eta_{\eta}\}$  and  $\{\eta_{\eta}\}$  and  $\{\eta_{\eta}\}$  and  $\{\eta_{\eta}\}$  are arbitrary Borel sets on the straight line. Let  $\{\xi_{\eta}\}$  be closed linear closures (in the quadratic mean) of the sets  $\{\xi_{\eta}\}$  and  $\{\eta_{\eta}\}$ . Theorem 1:

87981, \$/052/60/005/002/001/003 C111/C222

On a Strong Mixing Condition for Stationary Random Gaussian Processes

Theorem 2: The maximal correlation coefficient satisfies

(3) 
$$\omega(\mathfrak{M}_{\S},\mathfrak{M}_{\eta}) \leq \S(\mathfrak{M}_{\S},\mathfrak{M}_{\eta}) \leq 2\pi \omega(\mathfrak{M}_{\S},\mathfrak{M}_{\eta}).$$

From the theorems 1 and 2 there follows that a Gaussian stationary process  $\xi(t)$  has the property of strong mixing then and only then if for the maximal correlation coefficient it holds  $\gamma(m_{-\infty}^+, m_{t+\tau}^\infty)$  for  $\tau \to \infty$ .

Let  $\xi(t)$  be a stationary process in the weak sense and

$$g(C) = g(H_{-\infty}^t, H_{\infty}^{\infty}).$$

Let the spectral function  $F(\lambda)$  be absolutely continuous; let  $f(\lambda)$  be the spectral density. Theorem 3: In the case of an integral time it holds

(4) 
$$g(z) = \inf_{\lambda} \operatorname{vrai} \sup_{\lambda} \left[ |f(\lambda) - e^{i\lambda z} \varphi(e^{-i\lambda})| \frac{1}{f(\lambda)} \right],$$

where inf is taken over all  $\phi(z)$  being analytically continuable into Card  $3/5^\circ$ 

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On a Strong Mixing Condition for Stationary Random Gaussian Processes

the interior of the interior of the unit circle. In the case of a continuous time it holds

(41) 
$$g(z) = \inf_{\varphi} \operatorname{vrai sup} \left[ |f(\lambda) - e^{i\lambda z} \varphi(\lambda)| \frac{1}{f(\lambda)} \right],$$

where inf is taken over all functions  $\varphi(z)$  being analytically continuable into the lower halfplane.

Theorem 4: If there exists a  $\varphi_0(z)$  being analytic in the interior of the unit circle (for a discrete time) or in the lower halfplane (for a continuous time) and having the boundary value  $\varphi_3(e^{-i\lambda})$  and  $\varphi_3(\lambda)$  respectively, and having the property that  $f/\varphi_0$  is uniformly continuous in  $\lambda$  and  $|f/\varphi_0| \ge 0$  holds for almost all  $\lambda$  then for

Z→∞ it holds

$$(7) \qquad g(\overline{c}) \to 0.$$

Card 4/5

KOLMOGOROV, A.N.

"Approximation of the Distributions of Sums of Independent Variables by Infinitely Divisible Distributions."

[Moscow State University imeni M.V.Lomonosov]

report to be presented 22 June 1960 at the 4th Symposium on Mathematics Statistics and Probability -Berkeley, California, 20 Jun- 30 Jul 1960.

KOLMOGOROV, A.N.; SARMANOV, O.V.

S.W. Bernshtein's works on the theory of probability; on his 80th birthday. Teor. veroiat. i ee prim. 5 no.2:215-221 '60.
(MIRA 13:9)
(Bernshtein, Sergei Matanovich, 1880-)

S/052/60/005/004/003/007 C 111/ C 333

AUTHORS: Gnedenko, B. V., Kolmogorov, A. N., Prokhorov, Yu. V., Sarmanov, O. V.

TITLE: On the Work of N. V. Smirnov in Mathematical Statistics (On the Occasion of his 60-th Birthday)

PERIODICAL: Teoriya veroyatnostey i yeye primeneniye, 1960, Vol. 5, No. 4, pp. 436-440

TEXT: On October 17, 1960 Nikolay Vasil'yevich Smirnov, Corresponding Member of the Academy of Sciences USSR, Professor, had his 60-th birthday.

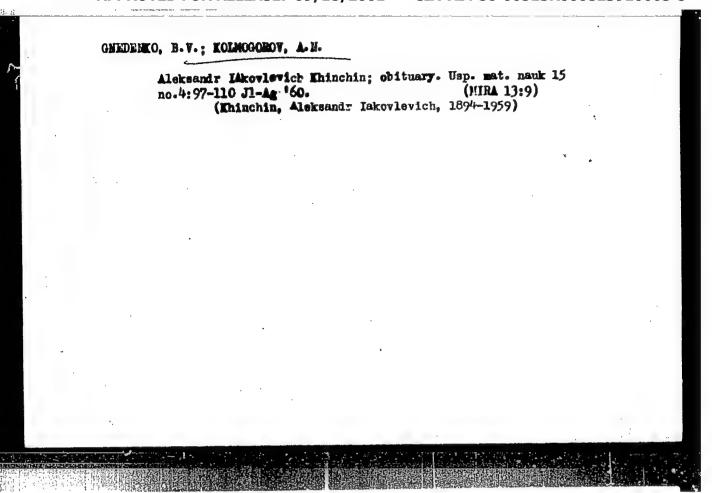
The first group of his papers is devoted to non-parametric problems. He considers: the distribution of the criterion  $\omega^2$  of Mises, the deviations from the empiric curves, "criterion of Smirnov".

The second group deals with the properties of the terms of the variation series. For papers of this group N. V. Smirnov obtained the Stalin prize. The third group is devoted to probability theory.

The authors call special attention to the difficulty of the considered problems and the elegance of the solutions. Card 1/2

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## "APPROVED FOR RELEASE: 09/18/2001 CIA-RDP

CIA-RDP86-00513R000823910003-5

KOLMOGOROV, A. N.

"On the Three-Dimensional Arrangement of One-Dimensional Complexes" (20 May 1960)

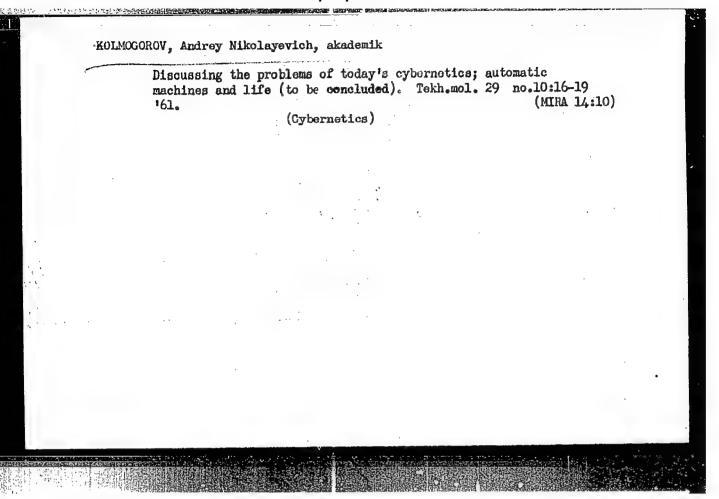
report delivered at a seminar on cybernetics, Moscow State University

So: Problemy kibernetiki, Issue 5, 1961, pp. 289-294

KOLHOGOROV, A. N. (USSR)

"Some remarks on the fluctuations in the Boundary layer."

Presented at the International Symposium on Fundamental Problems in Turbulence and Their Relation to Geophysics, Marseille, France, Sept. 4-9, 1961



KOLMOGOROV, A.N., akademik; BRUYEVICH, N.G., akademik

Discussion of present-day problems in cybernetics (to be continued). Tekh.mol. 29 no.ll:30-33 '61. (MIRA 14:11) (Cybernetics)

KOLMOGOROV, Andrey N.

"3-entropy of classes of functions and the algorithmic complexity of 3-approximation of an individual function" To be presented at the IMU International Congress of Mathematicians 1962 - Stockholm, Sweden, 15-22 Aug 62

Active Member, Acad. of Sciences USSR; Head, Statistical Laboratory, Noscow State Univ. (1962 position)

# "Program complexity and algorithm complexity in construction of finite sequences" report submitted for the Intl. Symposium on Relay Systems and Finite Automata Theory (IFAC), Moscow, 24 Sep-2 Oct 1962.

KOLMOGOROV, A. N. and OFMAN, Yu. P.

"On problem solution by automata consisting of simple elements"

report submitted for the Intl. Symposium on Relay Systems and Finite Automata Theory (IFAC), Moscow, 24 Sep-2 Oct 1962.

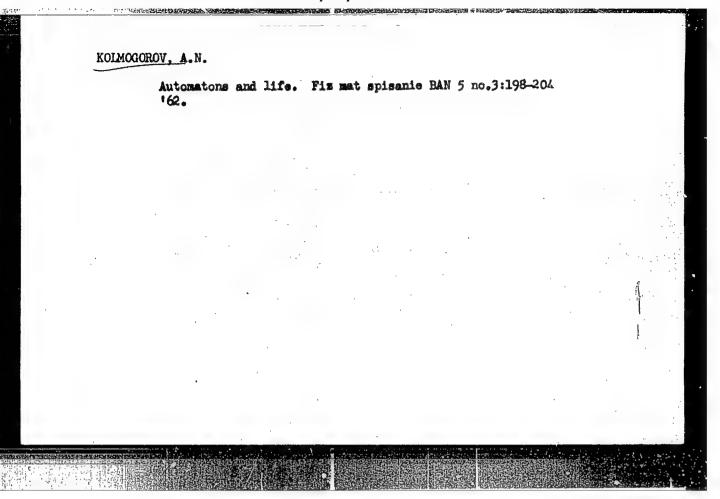
VOROB'YEV, N.N., red.; GNEDERKO, B.V., red.; DOERUSHIN, R.L., red.;
DYNKIN, Ye.B., red.; KOIMOGOROV, A.N., red.; KUBILYUS, I.P.
[Kubilius, I.P.], red.; LINNIK, Yu.V., red.; PROKHOROV, Yu.V.,
red.; SMIRNOV, N.V., red.; STATULYAVICHYUS, V.A.[Statuliavicius,
V.A.], red.; YAGLOM, A.M., red.; MELINENE, D., red.; PAKERITE,O.,
tekhn. red.

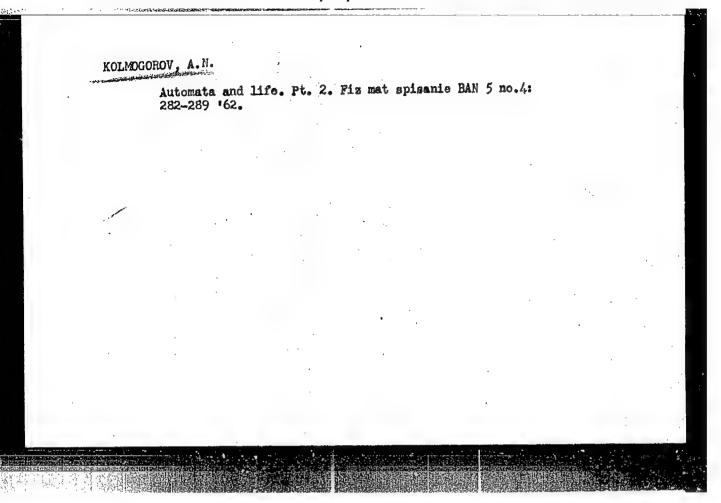
[Transactions of the Sixth Conference on Probability Theory and Mathematical Statistics, and of the Colloquy on Distributions in Infinite-Dimensional Spaces]Trudy 6 Vsesoiuznogo soveshchania po teorii veroiatnostei i matematicheskoi statistike i kollokviuma po raspredeleniiam v beskonechnomernykh prostranstvakh. Vilnius, Palanga, 1960. Vil'nius, Gos.izd-vo polit. i nauchn. lit-ry Litovskoi SSR, 1962. 493 p. (MIRA 15:12)

1. Vsesoyuznoye soveshchaniye po teorii veroyatnostey i matematicheskoy statistike i kollokviuma po raspredeleniyam v boskonechnomernykh prostranstvakh. 6th, Vilnius, Palanga, 1960.

(Probabilities—Congresses) (Mathematical statistics—Congresses)

(Distribution (Probability theory))—Congresses)





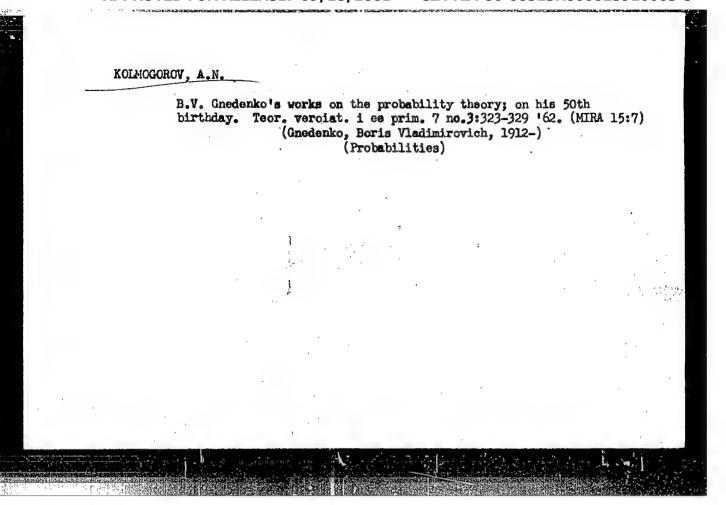
APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5"

AYVAZYAN, S.A.; KOLMOGOROV, ..N.; MESHALKIN, L.D.; PISARENKO, V.F.

"Mathematical statistics in technics" by A.M. Dlin. Reviewed
by S.A. Aivazian and others. Teor. veroiat. i ee prim, 7 no.2:
243-248 '62.

(Mathematical statistics)

(Dlin, A.M.)



GIKHMAN, I.I.; KOLMOGOROV, A.N.; KOROLYUK, V.S.

Boris Vladimirovich Gnedenko; on his 50th birthday. Usp.
mat.nauk 17 no.4:191-200 '62. (MIRA 15:8)
(Gnedenko, Boris Vladimirovich, 1912-)

KOLMODOROV, A.N., akademik

We need a new definition of life. Nauka i zhizn' 29 no.4:12-13
Ap '62. (LIFE (BIOLOGY))

(MIRA 15:7)

KOLMOGOROV, A.H., akademik; MISHCHENKO, Ye.F.; PONTRYAGIN, L.S., akademik

Probability problem of optimum control. Dokl.AN SSSR 145
no.51993-995 '62. (MIRA 15:8)

1. Matematicheskiy institut im. V.A.Steklové AN SSSR.

(Probabilities) (Automatic control)

ARATO, M.; KOLMOGOROV, A.N., akademik; SINAY, Ya.G.

Evaluation of the parameters of a complex stationary Gaussian type Markov process. Dokl. AN SSSR 146 no.4:747-750 0 '62. (MIRA 15:11)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.

(Markov processes)

### KOLMOGOROV, A.N.

Approximation of the distributions of sums of independent items by infinitely devisible distributions. Trudy Mosk. mat. ob-va 12:437-451 '63. (MIRA 16:11)

1. Parokhod "Sergey Kirov", Krasnoye more - Persidskiy zaliv.

VISHIK, M.I.; KOLMOGOROV, A.N.; FOMIN, S.V.; SPIDOV, G.Vo.

1zrail' Moiseevich Gel'fanc, 1913-; on his 50th birthday.
Usp. mat. nauk 19 no.3:187-205 My-Je '64.

(MIRA 17:10)

ALEKSANDROV, P.S.; KOLMOGOROV, A.N.

Lev Abramovich Tumarkin, 1904-; on his 60th birthday. Usp.
mat. nauk 19 no.4:219-221 '64.

(MIRA 17:16)

L 5710-65 ENT(d)/EED-2 Pb-L/Pc-L/Pg-L/Pg-L/Fk-L LJP(c)/SSD/ASD(d)/RAEN(1)/
FPTR/AFTC(p)/AMD/:SD(dp)/tSD(t)/RAEN(t) BE/GO
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FPTR/AFTC(p)/AMD/:SD(dp)/tSD(t)/RAEN(t) BE/GO
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FPTR/AFTC(p)/AMD/:SD(dp)/tSD(t)/RAEN(t)
AN 3STR. Doklady\*, v. 157, no. 2, 1964, 303-306

TOPIO TAGS: correcting code, cyberastics, kN code, error detection code, control theory

ABSTRACT: The author introduces symbols and definitions useful in the study of the systems of in ormation communication. Re uses these symbols for expressing theorems most of which are contained in the book by W. Peterson "Error Correcting Codes" (few York, 1961).

The paper concerns partfullerly with the kN-codes (k informational and log(N+1) / error-checking symbols, which comprise the totality of N, 2N, ... (2k-1)N numbers). No simple method of decoding of are known at present. It appears that they are more useful election than in error correction. Fig. Art. Rag: 4

equations

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AUTHOR: Freydlin, M. I.; Kolmogorov, A. N. (Academician)

G

TITUE: On a priori estimates of solutions of degenerate elliptic equations

SOURCE: Doklady\*, v. 158, no. 2, 1964, 281-283

TOPIC TACS: degenerate elliptic equation, a priori solution estimate, Markov process, Markov process trajectory, Dirichlet problem, elliptic operator

ABSTRACT: Determination of certain a priori estimates of the generalized solution of the Dirichlet problem

$$Lu(x) = c(x)u(x) = 0, x(0, u(x)) = 0, x(0, u(x)) = 0, x(0, u(x), u(x)) = 0, x(0, u(x), u(x)) = 0, x(0, u(x), u(x), u(x)) = 0, x(0, u(x), u(x),$$

erate), c(x) is a continuous nonnegative function in n-dimensional space, and  $\psi(x)$  is continuous on the boundary f, constructed earlier

Card 1/2

14579-05 ACCESSION NR: AP4045619

by the author (Akademiya nauk SSSR, Izvestiya, ser. matem., v. 25, no. 6, 1962), is considered. On the basis of a certain Stochastic for the generalized solution of (1) is derived whose behavior is analyzed in connection with the behavior of the larkov process trajectories. Conditions are presented under which a priori estimates of the generalized solution and of its derivatives are established. Estimates derived make it possible to analyze the smoothness of solutions of the degenerate equations as well as to construct the generalized solution of the Dirichlet problem for degenerate quasilinear equations. Orig. art. has: 4 formulas.

ASSOCIATION: none

SUBMITTED: 1/1/pr64

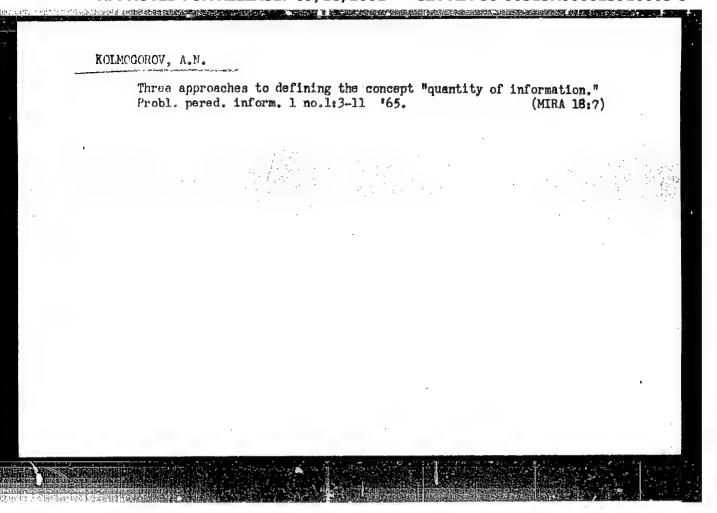
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ACCESSION NR: AP5014804 (1987) ACCESSION NR: ACCES	450-487	
AUTHOR: Kolmogorov, A. N. (Academician)		1
TITLE: Problems in probability theory and mathematical statistics		
Title: Produces in productivy cheery and machigantered savethere		
SCURCE: AN SSSR. Vestnik, no. 5, 1965, 94-96		
matter annihility, mathematic statistics, information theory	: 4.1	
TREATH I he present state of and basic trends in probability theory and math-	1.1	
on and statistics were evaluated by Academician A. N. Kolmogorov at a	1 7 7	
westing of the Department of Mathematics of the Academy of		
— in the property of the first transfer of the second o		
nausted there is now a great deal of activity in this field of probability	i .	
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	HOME	
theory.		
Contain problems in the field of limit theorems were discussed in a	·	
:	- তিক্ক সাহত <del>- তেও</del> ক -	
lems and their applications; which was presented on 29 October 1964 at an		-
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	nageria significant	
CALL PROCESS AND CONTRACTOR OF		

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L 58517-65 ACCESSION NA:	AP5014804		· L
meeting, A	eral meeting of the Department of Mathematics. At the same A. Borovkov reported on his studies of a second trend origi- Cramer in the field of the so-called "large deviations theorems		
and on their	r important applications to mathematical stationes.	A.	
ducted by I	s also stressed that the USSR continues to play an important role  B. Dynkin's school. However, more attention should be given  blems in the theory of Markov processes which cover a wider  clications. In particular, it is considered urgently necessary to		
1	$x(t) = \left\{ x_1(t), x_2(t) \right\},$ the component $x_1(t)$ can be observed statistically. It was indi-		
whate Only	the component xitt can be observed outside the such interesting ideas on soliding it shows a resident in such		<del></del> =
Card 2/5			

L 58519-65 ACCESSION NR: APSOL4804 Markovian processes have been formulated by R. L. Stratonovich in his theory of "conditional Markov processes," but it is regrettable that his studies lack the necessary accuracy. A. D. Ventzel explained in his report how certain parts of this theory can be developed with the required accuracy. The spectral theory of stationary processes is developing very rapidly at present. Particular attention is being paid to the "nonlinear" spectral those which is essential in studying various problems in radio engineering, manussion of information, and other fields. The opinion was expressed that several years ag. Soviet scientists were behind Western scientists in the field of information theory, but now this lag has been eliminated. Studies by the late A. Ya. Khinchin and R. L. Pubrushin occupy a prominent place in international science. of information , not of its own nature a probabilistic concept, but probabilistic methods prevail in more advanced chapters of information theory. he of that the relation between information theory and probabilreally changed by a control is the basis for the probability theory. Cord 3/5

L 58519-65 ACCESSION NR: AP5014804 It was noted that the concepts of information theory (beginning with fundamental concept of entropy) play a principal role in the recently ... ted "theory of dynamic systems." The analogy between dynamic isystems and random processes was understood long ago, but in recent studies originated by A. N. Kolmogorov and continued by V. A. Rokhlin and, in particular, by Ya. G. Sinay, this analogy has become more evident Ir particular, Ya. G. Sinay has proved an old hypothesis concerning the asymmetric rally normal distribution of the "staying time" in various domains of phase space. Despite the fact that outstanding studies were conducted by N. B. Smirnov, Yu. B. Linnik, and their co-workers, it was stressed that activities of Soviet mathematicians in the field of mathematical statistics are finitions. It is considered that such an unsatisfactory situation pre-المراجع المهرجة ودام ما يورج A STATE OF A STATE OF athematicians have had only quite accidental contact with this kind of work,

	L 50719-65 ACCESSION NR: AP5014804	ŕ
	It was revealed that extensive work has been done of the Wathan the	
	V. A. Steklova of the Academy of Sciences USSR under the	
	tistical tables.	· · · ·
	ASSOCIATION: none	
	SUBMITTED: CO ENCL: CO SUB CODE: NA	
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APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5"

I	45189-65 EVE(d) IJP(c) 8/0020/65/161/001/0009/0012 S/0020/65/161/001/0009/0012	
1	AUTHOR: Arnolid, V. I.: Kolmogorov, A. N.	
	TITLE: Validity conditions of the error in an averaging method for systems which pass through resonance in the process of evolution	
	SOURCE: AN SSSR. Doklady, v. 161, no. 1, 1965, 9-12	
	TOPIC TAGS: validity condition, error evaluation, averaging method, resonance, evolution	
	ABSTRACT: The behavior of solutions of systems of the form $\varphi = \omega(I;s) + s f(I,\varphi;s)_{i} : I = s F(I,\varphi;s)_{i} : \varphi = \varphi_{I_{i}}, \varphi_{k} : I = I_{i}, I_{l} $ (1)	
	(where $\Phi$ (mod $2\pi$ ) are angles; $\ell \ll 1$ ; the dot indicates the derivative with respect to time t; functions $\omega_{\ell}/F$ are analytic at derivative with respect to time t; functions $\omega_{\ell}/F$ are analytic at $I \subseteq G$ , $ Im \varphi  < \rho_{\ell}  \omega_{\ell}  < \omega_{\ell}$ ; $G$ is a complex compact rigion) is generally studied by the "averaging method," that is, by replacing equation (1) by the averaged system $F(f) = \frac{1}{2\pi} F(f) = $	
	Although the terms of ar which are discarded in averaging	
. 4 13.	Card 1/2	

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QCESSION NR: AP500920			
are of the same order of the same order of the same order of the countries of the following estimate.	rse of time (~ 1/2 to tions with identical mall. In a single-fr	G GTTT DE GIOG DO DU OGEN	
$ I(t)-I(t)  < C_{16}  ;  0 <$	$t < 1/\epsilon$ ). Here, () dent of $\epsilon$ , $K$ , $N$ , $\epsilon$ . The $\epsilon = 2$ ). We assume con	can are sufficiently are sufficiently article considers the additions sufficient for attentions.	<b>V</b>
$C_2^{-1}\sqrt{s} \leq  I(t)-I(t)  \leq t$ wo sample systems. Oz	Cave in2 (1/8). Calo	ilations are adduced for	
ASSOCIATION: - Moskovsk Lomonosova (Moscow Stat	ly gosudarstvemyy un se University)	iversijet im. M. V. 🚈	
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ille wat.	L 23534-66 EMT(1)/FCC GW
11日本	ACC NR: AF6003482 (N) SOURCE CODE: UR/0020/16/166/001/0049/0052
Section .	AUTHOR: Yaglom, A. M.; Kolmogorov, A. N. (Academician) 3/
	ORG: Institute for the Physics of the Atmosphere of the AN SSSR (Institut Maiki atmosfary AN SSSR)
Tri	TITLE: The effect of Cluctuations in the dissituation of energy on the
36	A CONTRACTOR OF THE PROPERTY O
To the	SOURCE: AN SSER. Doklady, v. 166, no. 1, 1966, 19-52
	TOPIC TAGE: atmospheric turbulence, kinetic energy conversion
等等的人人 多名人	ABSTRACT: An important part of the modern theory of the local structure of developed turbulence is the "two-thirds" law proposed by Kolmogorov and Obukhov for the longitudinal and transverse structural functions of the velocity field $D_{LL}(r)$ and $D_{NN}(r)$ in the inertial interval $L\gg r\gg n$ and the corresponding "five-thirds" law for the velocity spectrum $E(k)$ in the interval $1/L \ll k \ll 1/n$ . It has been shown, however, that these fluctuations of the quantity $e = \frac{v}{2} \sum \begin{pmatrix} \partial u_i & \partial u_j \\ \partial u_k & \partial u_j \end{pmatrix}^2$
: '	UDC: 532.517.4 3
	Card C/CV

ACC NR: AP7005425

SOURCE CODE: UR/0042/66/021/004/0275/0278

AUTHOR: Rolmogorov, A. N.

"P. S. Aloxandroff and the Theory of Ss Operations"

Moscow, Uspokhi Matematematicheskikh Nauk, No. 4, Vol. 21, 1966, pp 275-278

Abstract: Kolmogorov reviews Alexandroff's contributions to the theory of &s operations. Sets of simply defined points of a numerical line are either finite, countable, or have the power of a continuum. The "continuum problem" seeks to find whether this is true for any subset of a numerical line. Alexandroff and Hausdorff solved the continuum problem for Borel sets, provaing that a Borel set whose power is greater than that of a countable set contains a complete subset. Analytical and positive operations may be replaced tains a complete subset. Analytical and positive operations may be replaced by an analytical positive operation on the given sets and their complements. The class of analytical positive operations coincides with is operation. A real topology is shown to exist in the space of subsets of a natural series.

It is pointed out that only Suslin sets can be obtained by using the &s operation with a closed set of subsets of a natural series. In one standard &s operation, called the A operation, strings of natural numbers are used. Any Borel set can be obtained by an A operation from a closed set. As pointed out by Suslin, A sets (Suslin sets) exist which are not Borel sets. Finally, the author treats Alexandroff's [-operation. Orig. art. has: 3 formulas.

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Card 1/2

UDC: 513.83

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ACC NR. AP7005425

ORG; APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5

TOPIC TAGS: topology, mathematics

SUB CODE: 12 / SUBM DATE: 30Jun66 / ORIG REF: 001 / OTH REF: 005

Card 2/2

### "APPROVED FOR RELEASE: 09/18/2001 C

CIA-RDP86-00513R000823910003-5

ACC NR: AP6004983 SOURCE CODE: UR/0408/65/001/0003/0011

AUTHOR: Kolmogorov, A. N.

f B

ORG: None

TITLE: Three approaches to the determination of the concept of "the quantity of information"

SOURCE: Problemy peredachi informatsii, v. 1, no. 1, 1965, 3-11

TOPIC TAGS: information theory, probability

ABSTRACT: The author presents detailed descriptions of two known approaches to the determination of the concept of "the quantity of information," the combinatorial approach and the probabilistic approach. The author introduces a new approach, the algorithmic approach, which employs the theory of recursive functions. The approach introduced has one substantial shortcoming: it does not account for the "difficulties" in processing program p and the object x (the concept of the quantity of information "in something") into the object y (the concept of the quantity of information "about something"). The author notes that the present note does not include discussions on the application of the constructions used on the algorithmic approach to a new basis for the theory of probability. An incomplete presentation of this idea is found in an earlier work (On tables of random numbers. Sankhya. The Indian Journal of Statistics, 1963, Series A, 25, 4, 369-376.).

SUB CODE: 09, 12 / SUBM DATE: 09Jan65 / ORIG REF: 001 / OTH REF: 001

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UDC 621.391.12

APPROVED FOR RELEASE: 09/18/2001 CIA-RDP86-00513R000823910003-5"

DURNOV, V.K.; BABUSHKIN, N.M.; PUSHKASH, I.I.; Prinimali uchastiye:

KOLMOGOPOV, A.V.; KLEPTSIN, V.G.; MASLENNIKOVA, E.G.;

GORYACHEVA, A.V.; BARAKHVOSTOV, V.S.; RASIN, B.S.; ZEMLYAKOV,

A.A.; BABOSHINA, G.V.

Distribution of the temperature of the hot blast in the tuyere passage of the blast furnace. Stal' 25 no.3:205-209 Mr '65. (MIRA 18:4)

1. Vsesoyuznyy nauchnc-issledovatel skiy institut metallurg-icheskoy teplotekhniki i Nizhne-Tagil skiy metallurgicheskiy kombinat (for Durnov, Babushkin, Pushkash).

OKUNEV, A.I.; KUSAKIN, P.S.; VATOLIN, N.A.; KOLMOGOROV, B.A.; ZAMORIN, L.N.

Obtaining metallic nickel directly from a liquid matte.
Trudy Inst. met. UFAN SSSR no.8:75-82 '63.

(MIRA 17:9)

KOLMOGOROV, I.

107-57-5-54/63

AUTHOR: Kolmogorov, I. (Kachiry, Kazakh SSR) TITLE: Repairing a Detent (Remont fiksatora) PERIODICAL: Radio, 1957, Nr. 5, p 55 (USSR)

PERIODICAL: Radio, 1957, Nr. 5, p 55 (USBR)

ABSTRACT: A broken detent spring of a bandswitch can be easily replaced without removing the bandswitch from the chassis. A piece of old phonograph spring

out to shape is used for replacement.

One figure illustrates the method of repair.

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APPROVING THE PROPERTY OF THE

KOIMOGOROV, N.A.

22918 Geometrioya tetradra yevklidova i neevklidova prostranstva, Uchen.

Zapiski (kirovskiy gos. ped. in-t im. lenina) Vyp. 5, 1948. C 64-143.

Bibliogr: 26 masv.

SO: LETOPIS' NO. 31, 1949

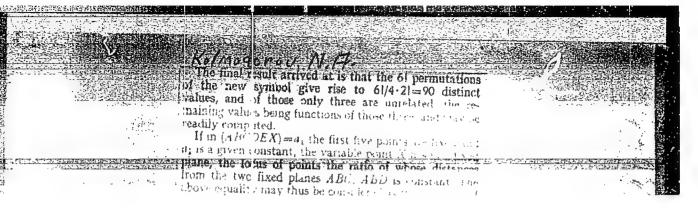
KCIECGOROV, N. A.

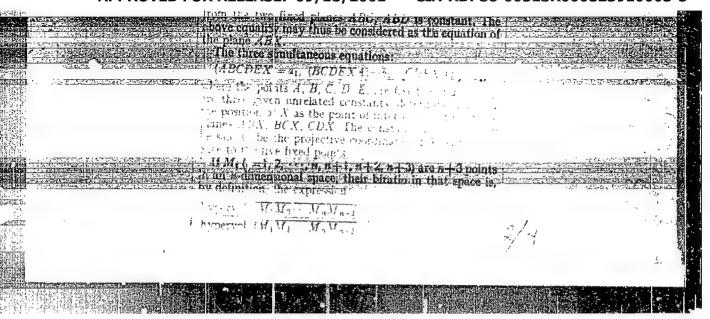
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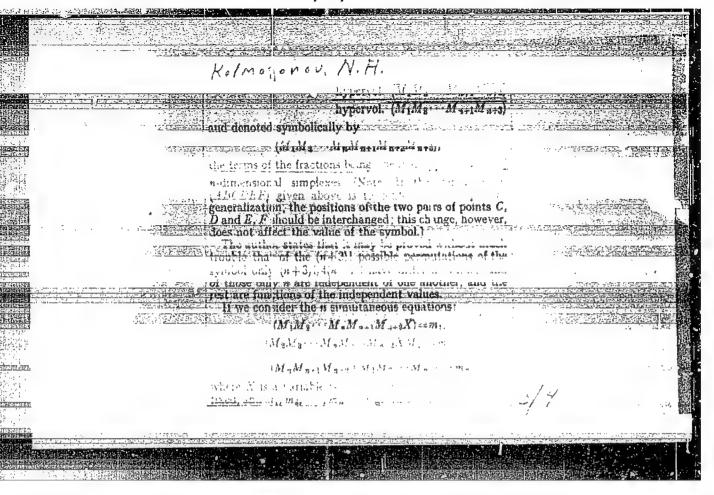
KCLMCGCROV, N. A. Osnovnye formuly gipersfericheskoy tetraedpometrii. Uchen zapiski (Mosk. Gos. UN-T Im. Lomonosova), Vyp. 135, Matematika, T. II, 1948 (NA Obl: 1949), S. 188-91.

SO: Letopis' Zhurnal'nykh Statey, No. 29, Moskva, 1949.

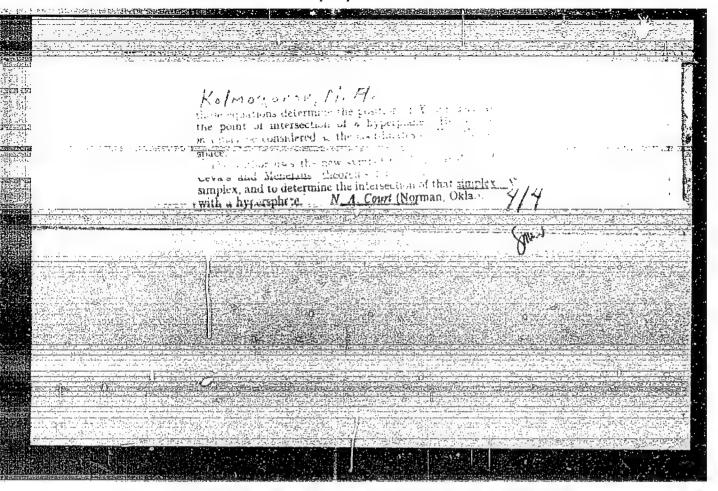
LOUMOGOROV, N. A	
Kolmogersy, N. A. Analogues of double or anharmonic ratios for a space of three or more dimensions and their application to the proof of some theorem. Across Cos. Ped. Inst. U. Zen. 1953, no. 1 4 cossum:	
The Biratio (i.e., the anharmonic ratio) of the non- coplanar points A B, C, D, E, F, in ordinary space i. defined it be the expression.  vol. ABEC   vol. ABEC	
the four perus of which are oriented volumes of terra- liedrons the bratic is denoted by the symbol (ABCDET).  In order to study this new symbol the author proves the	
metric superieure, Bachelier, Paris, 1852, art. 30, pp. 23-24; I. Neiberg, Mathewa (3) 7 (1907), 73-75, Lemma, p. 73. With the help of this relation it is shown that if in (ABCDE r) the letters A, B remain fixed, the 41 permutations of the symbol give rise only to six distinct values	
which are related to each other in the same way as values of the bitatics of four collinear points.	







#### 



BERRZANSKAYA, Yelizaveta Savil'yevna; KOIMOGOROV, Nikolay Andreyevich;
NAGIBIN, Fedor Fedorovich; CHERKASOV, Hoatislav Semenovich;
LEPESHKINA, N.I., red.; GOLOVKO, B.N., tekhn.red.; KORNEYEVA,
V.I., takhn.red.

[Collection of problems and exercises on geometry; textbook for secondary school teachers] Sbornik zadach i voprosov po geometrii; posobie dlia uchitelei srednei shkoly. Moskva, Gos. uchebno-pedagog. zd-vo M-va prosv.RSFSR, 1959. 207 p.

(MIRA 13:10)

(Geometry--Problems, exercises, etc.)

BUDANTSEV, P.A., red. (g.Orenburg); KARNATSEVICH, V.S., red. (g.Tyumen<sup>1</sup>);

KOLMOGOROV, N.A., red.[g.Kirov): KOCHETKOVA, Ye.S., red. (g.Chelyabinsk); NAGIBIN, F.F., red. (g.Kirov); YAKOVKIN, M.V., red.; SHCHEPTEVA, T.A., tekhn. red.

[Teaching mathematics in secondary schools; second collection of articles by the stabl members of the Ural pedagogical institutes]
Voprosy prepodavaniia matematiki v srednei shkole; vtoroi sbornik statei rabotnikov kafedr pedagogicheskikh institutov Ural'skoi zony.
Posobie dlia uchitelei. Moskva, Gos. uchebno-pedagog. izd-vo M-va prosv. RSFSR, 1960. 214 p. (MIRA 14:10)

(Mathematics—Study and teaching)

KOLMOGOROV, P.A., tekbnik

Gonveyor gallery 9 llm long completed in a month with the PK-3 cutter loader. Shakht. stroi. 7 no.4:18-19 Ap '63. (MIRA 16:3)

1. Shakhta "Polysayevskaya" No.2.

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L 1708-66 - EWI(1) | GW

ACCESSION NR: AR500/7331

3/0271/65/000/001/B061/B061 681.142:001

SOURCE: Ref. zh. Avtomatika, telemekhanika i vychislitel!naya tekhnika. Sv Abs. 1B346

AUTHOR: Kolmogorova, P. P.

Verent State of the State of th TITLE: Evaluation of composition of a (geological) base by a digital computer using gravitational and magnetic anomaly datae 12,44,55

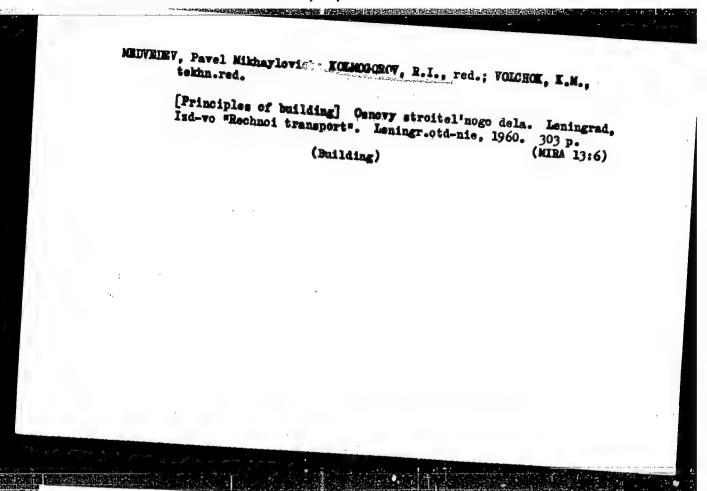
CITED SOURCE: Sb. Issled. statist. 1 funktsional'n. liheyn. svyazey v gravirazvedke i magnitorazvedke, Novosibirks, 1963, 121-130

TOPIC TAGS: geologic survey, compute

TRANSLATION: The results are reported of an investigation of the potential ties of computer interpretation of gravitational- and magnetic-survey data. Correlations between gravitational and magnetic anomalies are used for evaluating the buse composition. Some correlations are usually established by visual examining of geological and geophysical maps of the terrain, and hence, the evaluation of composition is only qualitative and roughly approximate. A mathematical analysis of survey data ensures efficiency of evaluation and is based on the quantitative

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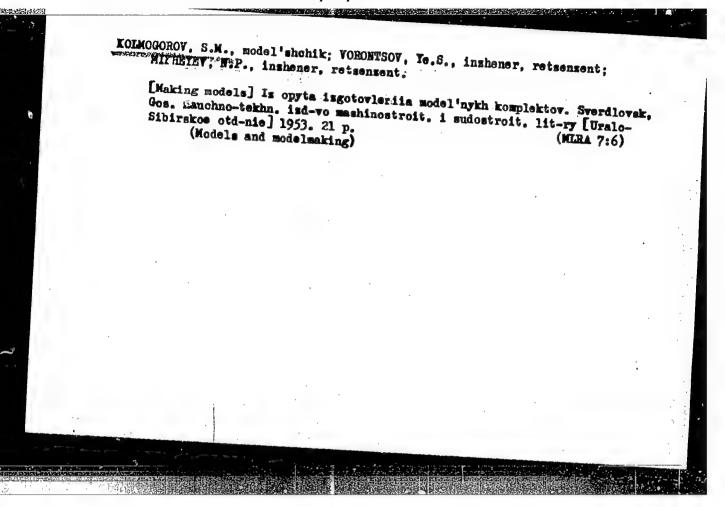
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BUTYLIN, A.M.; KOLMOGOROV, R.I., kend. tekhn.nauk, dots., red.; VOLCHOK, K.M., tekhn. red.

[Drawing and reading architectural and construction plans]
Sostavlenie i chtenie arkhitekturno-stroitel'nykh chertezhei.
Moskva, Izd-vo "Rechnoi transport," 1963. 59 p.

(MIRA 17:1)



GIMMEL'MAN, Nikolay Robertovich; IOCHUROV, Aleksey Stepanovich;
Prinimali uchastiye: BORISOV, A.P., inmh.; ZHIDKIMH, I.A.,
inmh.; VOLEGOV, A.F., inmh.; SHABALIM, L.A., inmh.
MIMHEIRV, N.P., kand.tekhn.nauk, retsenment; ABADUMOV, S.F.,
inmh., retsemment; ZALOZHNEV, G.M., inmh., retsemment; ILOTSMAN, N.I., iumh.,
retsenment; ICCMOGROV S.M., iumh., retsemment; BLAMY, M.M.,
inmh., red.; IUGIMA, M.A., tekhn.red.

[Making models] Model'noe proisvodstvo. 3. perer. imd.
Moskva, Mashgis, 1961. 295 p. (MIRA 14:12)

(Ingineering models)

(Molding (Founding)—Equipment and supplies)

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	on the Surface of Solids* Presented at the IUPAC Symposium on Mole Tokyo, Janpan, 10-15 Sep 62.		etroscopy,	
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Calculation of the deviations of vertical lines based on gravity anomalies. Geol. i geofiz. no.8:100-106 '63. (MIRA 16:10)

1. Institut geologii i geofiziki Sibirskogo otdeleniya AN SSSR Novosibirsk. (Gravity anomalies)

KOLMOGOROV, V.L., Cand Tech Sci-(diss) "Eertain problems of the theory and practice of continuous pipe rolling on a long staightening device." Sverdlovsk, 1958. 16 pp; 1 sheet of drawings (Min of Higher Education USSR. Ural Polytech Inst im S.M. Kirov), 100 copies (KL, 25-58, 113)

-101-

SOV/124-59-9-10628

- Translation from: Referativnyy zhurnal, Mekhanika, 1959, Nr 9, p 146 (USSR)

AUTHOR:

Kolmogorov, V.L.

TITLE:

On Application of the Energy Principles of the Plasticity
Theory to Solving the Problems of Pressure Treatment of Metals

PERIODICAL:

Sb. statey. Ural skiy politekhn. in-t, 1958, Nr 64, pp 91-101

ABSTRACT:

The author applies the energy principle to solving the problem on reduction of plates hitted with parallel plane strikers; the plate material is assumed to be ideally plastic. The approximate formula obtained for the total reduction stress is compared with the results from experiments on the reduction of rectangular aluminum parallelepipeds; the deviation amounts to 21%, Bibl. 15 titles.

I.A. Kiyko

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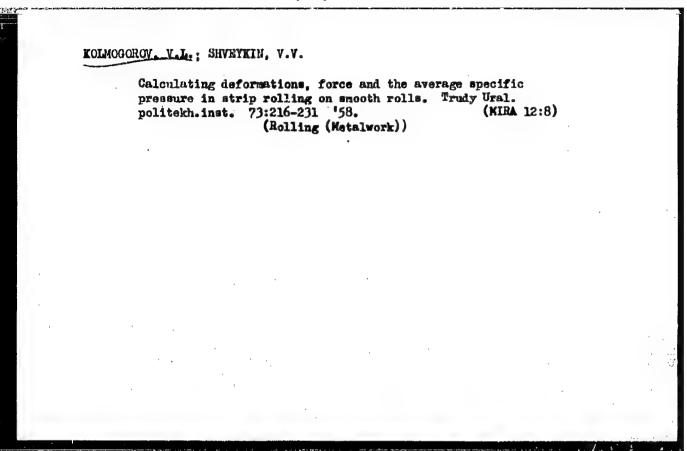
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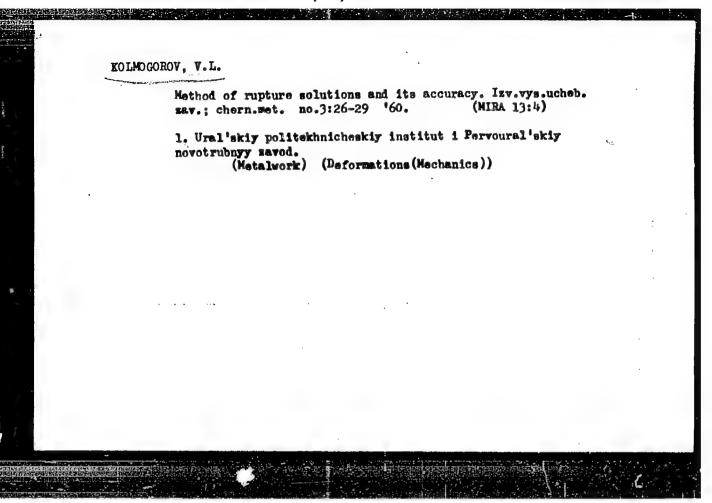
KOLMOGOROV, V.L.; SHYEYKIN, V.V.

Obtaining a gap between pipe and mandrel during rolling on continuous mills. Trudy Ural.politekh.inst. 73:207-215

158.

(Rolling (Metalwork))





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S/148/60/000/009/011/025 A161/A030

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Volmororov V 1

AUTHOR:

Kolmogorov, V.L.

TITLE:

The aspects of metal pressure working process investigation

with plasticity theory methods

PERIODICAL:

Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya,

no. 9, 1960, 79-89

TEXT: The modern mathematical theory of small plastic deformations is extraordinarily complex in view of the nonlinear relation between stresses and deformations, and even modified approximate methods lead to very complex equations, the full solution of which is very difficult if at all possible. The aution suggests a plasticity condition that makes it possible to determine approximately (and with sufficient accuracy for engineering calculations) the relation between stresses and deformations in the hot plastic deformation of metals. The mathematical apparatus of the small plastic deformations theory is only applicable for 10-20% deformation (the higher this limit the less accurate are the results). Deformation to this degree is accompanied with most intensive strengthening, and the working

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The aspects of metal pressure ...

complex strengthening law can be expressed with the known formula

$$T = g(\Gamma) \cdot \Gamma , \qquad (1)$$

where  $g(\Gamma)$  is the function of deformation intensity characteristical for the given material at a certain temperature and speed of deformation, and T - the intensity of tangential stresses. The strengthening law (1) in the first approximation can be expressed as

$$T = t \in \varphi \Gamma$$
, (2)

where  $tg \varphi$  is a constant value - the strengthening modulus, or the mean angular coefficient of the strengthening curve. The hypothetical material the strengthening law of which is the formula (2) can be called "nonrigid linear strengthening material". Such theoretical material as well as ideally plastic material reflect only inaccurately the real process and may be considered as a kind of approximation "from right and left", or patterns of real metal (Fig.1). It has been stated in experiments (carried out by the

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The aspects of metal pressure ...

author together with Engineer Yu. V. Tishinskiy) that not the ideally plastic metal but the nonrigid linear strengthening gives results nearer to the real (Fig. 2). The dependence of the deformation line on temperature could not be determined. The equation of work, for determining the deformation efforts is evolved from equation (3) and equation (4) which is valid for the work of external forces and internal resistances in any solid medium:

$$\int_{S} (x_{n} \cdot u_{n} + Y_{n} \cdot v_{n} + Z_{n} \cdot v_{n}) dS = \int_{S} (\sigma_{x} \xi_{x} + \sigma_{y} \xi_{y} + \dots + \tau_{zx} \cdot \gamma_{zx}) \cdot dV$$
 (4)

where  $X_n$ ,  $Y_n$ ,  $Z_n$  and  $\sigma_x$ ,  $\sigma_y$ , ...  $\mathcal{T}_{2x}$  are external and internal stresses, and un,  $v_n$ ,  $w_n$ ;  $\mathcal{E}_{x}$   $\mathcal{E}_{y}$  ...  $\mathcal{T}_{2x}$  the static corresponding displacements on the surface and deformations in the volume of the body. Substituting (3) and (4), the work equation (determining deformation efforts) for nonrigid linearly strengthening material is

$$\int_{S} (X_n u_n + Y_n v_n + Z_n w_n) dS = \int_{V} tg \varphi \cdot \Gamma^2 \cdot dV, \qquad (5)$$

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The aspects of metal pressure

where 
$$\Gamma = + \sqrt{4 \xi_{x}^{2} + 4 \xi_{y}^{2} + 4 \xi_{x} \xi_{y} + \gamma_{xy}^{2} + \gamma_{yz}^{2} + \gamma_{zx}^{2}}$$

After determining the deformed state with the equation (5) the deformation effort can be calculated more accurately by substituting the displacement functions found in the variation equation (7) for nonrigid linear strengthening material in equation (4) for a body of real material with complex strengthening law. The result will be:

$$\int_{S} (X_{n} - u_{n} + Y_{n} - v_{n} + Z_{n} - w_{n}) + dS = \int_{V} g(\Gamma) \Gamma^{2} - dV$$
 (11)

The effort found with the formula (11) will be slightly higher than the real one in deformation, for the substituted functions are extremal. The problem of uniform compression of a pipe without a mandrel was analyzed and the result used for calculation graphs for ideal plastic and for strengthening

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